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Math EXPERT



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Math

Expert teachers

Sheets for Home Work

Math



Answer the following questions :

1 Choose the correct answer from those given :

- (1) If $\frac{7}{x+5}$ is a rational number , then $x \neq$
 (a) -5 (b) 0 (c) 5 (d) 10
- (2) $\frac{5-x}{x-3} = \text{zero}$ if $x =$
 (a) 3 (b) 5 (c) zero (d) -3
- (3) 15 % =
 (a) 0.15 (b) $\frac{3}{20}$ (c) 1.5 (d) $\frac{3}{25}$
- (4) $\frac{x}{-5}$ is negative if x zero
 (a) > (b) < (c) \leq (d) =
- (5) $\frac{5}{11} =$ on the form of recurring decimal.
 (a) 0.45 (b) 0.454 (c) 0.45 (d) 0.045
- (6) $|-1\frac{2}{5}| =$
 (a) 1.04 (b) -1.4 (c) 140 % (d) 40 %

2 Write each of the following on the form of $\frac{a}{b}$ in the simplest form :

- (1) $|-2.25|$ (2) 35 %

3 Show which of the following numbers is an integer :

$$\frac{3}{4}, \frac{-5}{2}, \frac{-11}{11}, \frac{0}{7}, 13\%, \frac{6-2}{0}$$

4 [a] Put each of the following numbers in the simplest form :

- (1) $\frac{45}{60}$ (2) $\frac{38}{95}$

[b] Write three rational numbers expressing each of the following rational numbers :

- (1) $\frac{5}{7}$ (2) $\frac{2}{9}$

Answer the following questions :

1 Choose the correct answer from those given :

(1) $\frac{7}{x-3} \notin \mathbb{Q}$ if $x = \dots\dots\dots$

(a) zero

(b) 3

(c) 4

(d) 7

(2) $\frac{4}{11} = \dots\dots\dots$

(a) $0.\dot{3}$

(b) $0.3\dot{6}$

(c) $0.\dot{3}\dot{5}$

(d) 35 %

(3) Which of the following fractions is closest to 0.35 numerically ?

(a) $\frac{3}{5}$

(b) $\frac{1}{2}$

(c) $\frac{1}{3}$

(d) $\frac{1}{4}$

(4) $|- \frac{10}{9}| \dots\dots\dots 1$

(a) >

(b) <

(c) =

(d) \leq

(5) The rational number which lies between $\frac{1}{4}$ and $\frac{1}{3}$ is $\dots\dots\dots$

(a) 0.25

(b) $\frac{31}{120}$

(c) $\frac{41}{120}$

(d) $0.\dot{3}$

(6) $\frac{5}{3} > \dots\dots\dots$

(a) $\frac{10}{3}$

(b) $\frac{25}{9}$

(c) $\frac{10}{6}$

(d) $\frac{3}{5}$

2 [a] Find three rational numbers lying between $\frac{1}{2}$ and $\frac{1}{3}$

[b] Represent on the number line the set of numbers $\{2\frac{1}{2}, \frac{1}{2}, -\frac{1}{4}, 1\}$, then write its elements in an ascending order.

3 Put each of the following on the form of $\frac{a}{b}$:

(1) $-6\frac{8}{9}$

(2) zero

4 If $a = 3$ and $b = 5$, which of the following numbers is rational and which is not ?

(1) $\frac{a}{2b}$

(2) $\frac{b}{3-a}$

(3) $\frac{b-5}{a}$

Answer the following questions :

1 Complete the following :

- (1) The additive identity in \mathbb{Q} is
- (2) The additive inverse of the number $-\frac{4}{9}$ is
- (3) The rational number $\frac{4-x}{5+x} = 0$ when $x = \dots\dots\dots$
- (4) $\frac{2}{5} = \dots\dots\dots\%$
- (5) $\frac{7}{2} + \frac{9}{16} = \frac{9}{16} + \frac{7}{2}$ (The property of
- (6) $\frac{3}{4} + \text{zero} = \frac{3}{4}$ (The property of

2 Choose the correct answer :

- (1) The remainder of subtracting $\frac{3}{7}$ from $\frac{9}{21} = \dots\dots\dots$
 - (a) zero
 - (b) $\frac{6}{21}$
 - (c) $-\frac{6}{14}$
 - (d) $\frac{12}{28}$
- (2) $-\frac{3}{4} \dots\dots\dots -\frac{6}{5}$
 - (a) $>$
 - (b) $<$
 - (c) $=$
 - (d) \leq
- (3) $-2\frac{1}{2} - 12\frac{1}{16} = \dots\dots\dots$
 - (a) $9\frac{9}{16}$
 - (b) $-9\frac{9}{16}$
 - (c) $14\frac{9}{16}$
 - (d) $-14\frac{9}{16}$
- (4) $\frac{5}{12} = \dots\dots\dots$
 - (a) 0.42
 - (b) 0.416
 - (c) $0.41\dot{6}$
 - (d) $0.4\dot{5}$

3 Using the properties of addition operation in \mathbb{Q} , find the result of each of the following :

- | | |
|---|--|
| <ol style="list-style-type: none"> (1) $\frac{3}{4} + \frac{5}{9} + \frac{1}{4} + \frac{4}{9}$ (3) $-\frac{3}{4} + \left(-\frac{2}{5}\right) + \left(-2\frac{1}{4}\right) + \frac{3}{15}$ | <ol style="list-style-type: none"> (2) $\frac{5}{8} + \frac{1}{3} + \frac{3}{8} + \left(-\frac{1}{3}\right)$ (4) $\left -\frac{1}{3}\right + \left(-\frac{2}{4}\right) + \frac{6}{9} + \frac{1}{2}$ |
|---|--|

4 If $x = \frac{2}{3}$, $y = -\frac{1}{2}$ and $z = \frac{1}{6}$, find the value of each of the following :

(1) $y + z$

(2) $(x - y) - z$

Answer the following questions :

1 Complete the following :

- (1) The multiplicative neutral element in \mathbb{Q} is
- (2) $2 \frac{1}{2} \div 3 \frac{1}{2} = \dots\dots\dots$
- (3) $\left(\frac{1}{6} + \frac{2}{6}\right)$ is the additive inverse of the rational number
- (4) The number $\frac{x+2}{x+5} \in \mathbb{Q}$ if $x \neq \dots\dots\dots$
- (5) $-\frac{3}{4} \times \dots\dots\dots = 1$
- (6) If $-3 \frac{4}{7} \times x = -3 \frac{4}{7}$, then the value of $x = \dots\dots\dots$
- (7) If $\frac{a}{b} = \frac{2}{3}$, then $\frac{3a}{2b} = \dots\dots\dots$
- (8) The multiplicative inverse of the number $5 \frac{1}{2}$ is

2 Find the result of each of the following :

- (1) $1 \frac{1}{2} \times \left(-\frac{1}{4}\right)$
- (2) $6 \frac{1}{4} \div (-15)$
- (3) $\frac{2}{9} + \frac{5}{7} + \frac{3}{9} + \frac{2}{7}$

3 Using the distribution property , find the value of each of the following :

- (1) $\frac{7}{12} \times \frac{23}{45} + \frac{17}{12} \times \frac{23}{45} - 2 \times \frac{23}{45}$
- (2) $\frac{22}{25} \times \frac{7}{11} + \frac{5}{11} \times \frac{22}{25} - \frac{22}{25}$

4 [a] Find three rational numbers between $\frac{1}{3}$ and $\frac{3}{4}$

[b] If $x = \frac{3}{4}$ and $y = -\frac{5}{3}$,

find in the simplest form the value of the expression : $\frac{x-y}{x+y}$

Answer the following questions :

1 Choose the correct answer from those given :

- (1) If $a \times \frac{b}{2} = \frac{a}{2}$, then $b = \dots\dots\dots$
 (a) $\frac{a}{2}$ (b) zero (c) 1 (d) $-a$
- (2) The number $\frac{x-3}{x-5} \in \mathbb{Q}$, if $x \neq \dots\dots\dots$
 (a) 3 (b) -3 (c) 5 (d) -5
- (3) $\frac{31}{55} = \dots\dots\dots$
 (a) $0.\dot{5}6\dot{3}$ (b) $0.5\dot{6}\dot{3}$ (c) $0.56\dot{3}$ (d) $0.\dot{5}\dot{3}$
- (4) If $a = \text{zero}$, $b = 5$ and $c = 2$, then the numerical value of the expression $a^2 b + ac = \dots\dots\dots$
 (a) zero (b) 2 (c) 6 (d) 8
- (5) The rational number which lies at the midpoint of the distance between $\frac{1}{2}$ and $\frac{7}{8}$ is $\dots\dots\dots$
 (a) $\frac{11}{16}$ (b) $\frac{11}{8}$ (c) $\frac{11}{4}$ (d) $\frac{11}{32}$
- (6) If $x + \frac{2}{x} = 5 + \frac{2}{5}$, then $x = \dots\dots\dots$
 (a) $\frac{4}{5}$ (b) 1 (c) $\frac{5}{2}$ (d) 5

2 [a] Find the value of : $\left(\frac{3}{4} - \frac{2}{3}\right) \div \left(\frac{1}{4} \times \frac{1}{3}\right)$

[b] Using the distribution property, find the value of : $\frac{5}{17} \times 10 + \frac{5}{17} \times 23 + \frac{5}{17}$

3 [a] Find a rational number lying at the quarter of the distance between $-\frac{3}{5}$ and $-\frac{4}{5}$ from the side of the smaller number.

[b] Using the addition properties in \mathbb{Q} , find out the result of : $\frac{4}{6} + \frac{4}{9} + \frac{1}{3} + \left(-\frac{8}{18}\right)$

4 Write three rational numbers lying between $\frac{3}{2}$ and $\frac{3}{4}$ such that one of them is an integer.

Answer the following questions :

1 Choose the correct answer from those given :

- (1) The degree of the algebraic term $2x^3y^2$ is
 (a) second. (b) third. (c) fourth. (d) fifth.
- (2) The coefficient of the algebraic term $3xy^2z^4$ is
 (a) 2 (b) 3 (c) 6 (d) 7
- (3) The degree of the algebraic expression $3x^2 + 2xy^2 + 3z^4$ equals the degree of the algebraic expression
 (a) $5xy + 3y^2z$ (b) $2x^2y^2 + 3x^2y$ (c) $2xy + 3x^4z$ (d) $5a^2b + 4ab^2$
- (4) The number of terms of the algebraic expression $3x^2 + 5xy + 6$ is
 (a) 1 (b) 2 (c) 3 (d) 4
- (5) The operation is unclosed in the set of rational numbers.
 (a) addition (b) subtraction (c) multiplication (d) division
- (6) If the degree of the algebraic term $2a^3b^n$ is ninth , then $n =$
 (a) 8 (b) 6 (c) 2 (d) 9

2 [a] Arrange the algebraic expression :

- (1) $7ab + 5a^5b^3 - 3a^2b^5$ (descendingly according to the powers of a)
- (2) $6x^2y + 5xy^3 - 4x^3y^4 + 3y^2$ (ascendingly according to the powers of x)

[b] Use the distribution property to find the value of : $\frac{3}{7} \times 2 + \frac{3}{7} \times 6 - \frac{3}{7}$

3 If $x = -\frac{1}{9}$, $y = \frac{3}{4}$ and $z = -3$, find the value of :

- (1) $x \div (y \times z)$
- (2) $(x + z) \times y$

4 Find the rational number which lies at the midpoint of the distance between $\frac{1}{2}$ and $\frac{2}{3}$

Answer the following questions :

1 Choose the correct answer from those given :

- (1) The number $\frac{x+7}{x-5}$ is a rational number if $x \neq \dots\dots\dots$
 (a) -7 (b) 5 (c) -5 (d) 7
- (2) $|\frac{3}{5}| + |-\frac{2}{5}| = \dots\dots\dots$
 (a) $\frac{1}{5}$ (b) $\frac{2}{5}$ (c) $\frac{3}{5}$ (d) 1
- (3) The algebraic expression $4x^3 - xy + 5$ is of the $\dots\dots\dots$ degree.
 (a) first (b) second (c) third (d) fifth
- (4) The remainder of subtracting $-5x$ from $3x$ is $\dots\dots\dots$
 (a) $-2x$ (b) $2x$ (c) $8x^2$ (d) $8x$
- (5) $-2x$ exceeds x by $\dots\dots\dots$
 (a) $3x$ (b) $-3x$ (c) $3x^2$ (d) $2x$
- (6) The multiplicative inverse of (the rational number $\frac{3}{2}$ is $\dots\dots\dots$)
 (a) $-\frac{2}{3}$ (b) $-\frac{3}{2}$ (c) -0.6 (d) 0.6
- (7) $\frac{1}{2} + \frac{3}{5} = \frac{3}{5} + \frac{1}{2}$ (the used property is $\dots\dots\dots$)
 (a) closure. (b) commutation.
 (c) association. (d) additive inverse.
- (8) $\frac{3x}{5} - \frac{x}{5} = \dots\dots\dots$
 (a) $\frac{2}{5}$ (b) $\frac{x}{5}$ (c) $\frac{2x}{5}$ (d) $2x$

2 [a] If the sum of two terms is $15ab^2$ and one of them is $7ab^2$, find the other term.

[b] Simplify to the simplest form :

$$5x + 10y + 6x - 3y + 7y - 4x$$

3 [a] Using the distribution property, find the result of : $\frac{5}{12} \times 7 + \frac{5}{12} \times 3 + \frac{5}{12} \times 2$

[b] Simplify to the simplest form : $3x^2y + 4xy^2 - 2y^3 + 3 + x^2y + 3y^3 - z$

Answer the following questions :

1 Choose the correct answer from those given :

- (1) The coefficient of the algebraic term $(-5x^2y^2)$ is
 (a) 5 (b) -5 (c) 3 (d) 2
- (2) The used property in the operation performing of $\frac{6}{7} \times 1 = \frac{6}{7}$ is the property of
 (a) associative. (b) commutative.
 (c) the existence of the multiplicative neutral.
 (d) the existence of the multiplicative inverse.
- (3) $\left(\frac{1}{2}\right)^{\text{zero}}$ $\left(\frac{1}{2}\right)^2$
 (a) < (b) > (c) = (d) ≤
- (4) The number $\frac{3+x}{2-x}$ is a rational number if $x \neq$
 (a) 2 (b) -2 (c) zero (d) -3
- (5) The increase of 7 a than 3 a =
 (a) -4 a (b) 4 a (c) 10 a (d) -10 a
- (6) The additive inverse of the number $|- \frac{2}{5}|$ is
 (a) $\frac{5}{2}$ (b) $\frac{2}{5}$ (c) $-\frac{2}{5}$ (d) $-\frac{5}{2}$

2 [a] Subtract : $x + x^2 - 5$ from $2x^2 + x - 3$, then find the numerical value of the result when $x = 6$

[b] Use the properties of addition operation in \mathbb{Q} to find the value of the expression :

$$\frac{5}{4} + \left(-\frac{13}{5}\right) + \left(-\frac{25}{4}\right) + \frac{28}{5}$$

3 [a] What is the increase of : $7x^2 + 5x - 8$ than $3x^2 - 7x + 1$?

[b] Insert two rational numbers between $\frac{3}{4}$ and $\frac{5}{6}$

4 [a] Add : $3a - 4b - 5c$ and $5b - 2a + 3c$

[b] Find the value of :

(1) $\frac{3}{5} \div \left(-\frac{9}{15}\right)$

(2) $\frac{3}{4} \times \left(\frac{1}{2} - \frac{1}{3}\right)$

Answer the following questions :

1 Choose the correct answer from those given :

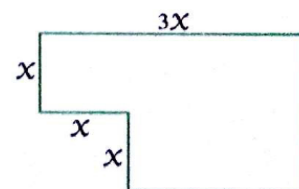
- (1) If the rational number $\frac{x-3}{x-5} = 0$, then $x = \dots\dots\dots$
 (a) 3 (b) 5 (c) -3 (d) -5
- (2) If the algebraic term $x^2 y^n$ is of the third degree, then $n = \dots\dots\dots$
 (a) 1 (b) 2 (c) 3 (d) 4
- (3) $7x$ exceeds $5x$ by $\dots\dots\dots$
 (a) $12x$ (b) $2x$ (c) $-2x$ (d) $-2x^2$
- (4) $(-3x^2 y)^2 \times 2xy = \dots\dots\dots$
 (a) $-18x^5 y^3$ (b) $18x^5 y^3$ (c) $6x^3 y^2$ (d) $9x^2 y^2$
- (5) $-6x^3 y^2 \div 3x^2 y = \dots\dots\dots$, where $xy \neq \text{zero}$
 (a) $-2x^2 y$ (b) $2xy$ (c) $-2xy$ (d) $-2x^2 y^2$
- (6) $\frac{y^5}{y^2} + y^3 = \dots\dots\dots$, where $y \neq 0$
 (a) y^6 (b) y^5 (c) $2y^3$ (d) y^3
- (7) $\dots\dots\dots \div 6a^2 = -4a^4$, where $a \neq 0$
 (a) $24a^6$ (b) $24a^2$ (c) $4a^2$ (d) $-24a^6$
- (8) $98a^7 b^4 = \dots\dots\dots \times 14a^7 b$
 (a) $7b^3$ (b) $7ab$ (c) $7b^4$ (d) $1372b^3$

2 [a] What is the decrease of : $2a - 8c + 3b$ than $5a + b - 2c$?

[b] Simplify to the simplest form : $\frac{6x^4 y^2}{7} \times \frac{28xy^3}{3}$

3 In the opposite figure :

Find the algebraic term which expresses the perimeter of the figure and also find the term which expresses the area of the figure, then determine the degree of each of them.



4 Add : $2x - 7y + z$ and $5z + 6y - 2x$

Answer the following questions :

1 Choose the correct answer from those given :

- (1) The additive inverse of the number $\frac{1}{3}$ is
 (a) $-0.\dot{3}$ (b) $\frac{3}{10}$ (c) 0.3 (d) 3
- (2) The remainder of subtracting $\frac{1}{3}$ from $\frac{4}{3}$ is
 (a) $-\frac{5}{3}$ (b) 1 (c) $\frac{2}{3}$ (d) $\frac{5}{3}$
- (3) $2x \times 3x = \dots\dots\dots$
 (a) $6x$ (b) $5x$ (c) $6x^2$ (d) $5x^2$
- (4) If the number $\frac{x-3}{x+5} \in \mathbb{Q}$, then $x \neq \dots\dots\dots$
 (a) 5 (b) -5 (c) 3 (d) -3
- (5) The number of all rational numbers that exist between $\frac{2}{5}$ and $\frac{4}{5}$ is
 (a) 1 (b) 2 (c) 3 (d) an infinite number.
- (6) The expression $2a + 5ab$ is of degree.
 (a) the first (b) the second (c) the third (d) zero

2 Simplify to the simplest form : $4n(n+5) + n(6-n)$

, then find the numerical value of the expression when $n = -1$

3 [a] Find three rational numbers between $\frac{2}{5}$ and $\frac{3}{7}$

[b] Find the result of : $(10x^2 + 5x^2) \div 5x$ where $x \neq \text{zero}$

4 [a] Use the distribution property to find the value of : $\frac{3}{7} \times \frac{5}{6} + \frac{3}{7} \times \frac{7}{6} - \frac{3}{7}$

[b] Subtract : $x^2 - 8x - 3$ from the sum of : $2x^2 + 5x - 1$ and $x^2 - 13x - 2$

Answer the following questions :

1 Choose the correct answer from those given :

(1) A rectangle , its length = $4x$ cm. and its width = $3x$ cm. , then its area = cm^2

- (a) $7x$ (b) $12x$ (c) $12x^2$ (d) $14x$

(2) $(4x - 3)(x - 4) = \dots\dots\dots$

- (a) $4x^2 - 19x - 12$ (b) $4x^2 - 7$ (c) $4x^2 - 12$ (d) $4x^2 - 19x + 12$

(3) If $(x + y)^2 = 26$ and $x^2 + y^2 = 20$, then $xy = \dots\dots\dots$

- (a) 3 (b) 6 (c) 9 (d) 12

(4) If $\frac{a}{b} = 60$, then $\frac{a}{3b} = \dots\dots\dots$

- (a) 17 (b) 20 (c) 23 (d) 180

(5) $(6x \div x) + \dots\dots\dots = 0$ (where $x \neq 0$)

- (a) $5x$ (b) $-5x$ (c) $6x$ (d) -6

(6) The middle term in the expansion of $(2x - 5y)^2$ is

- (a) $-10x^2y^2$ (b) $10x^2y^2$ (c) $20xy$ (d) $-20xy$

2 [a] Simplify to the simplest form : $(2a - 3)(2a + 3) + 7$,

then find the numerical value of the result when $a = -1$

[b] Find the sum of the expressions : $3a - 7b - 5c$ and $2a + 3c$

3 [a] Use the distribution property to find the value of : $6 \times \frac{5}{7} + 2 \times \frac{5}{7} - \frac{5}{7}$

[b] Find the rational number which lies in the middle of the distance between $\frac{1}{2}$ and $\frac{2}{3}$

4 If $x = -\frac{1}{3}$, $y = \frac{3}{4}$ and $z = -3$, find the numerical value of each of the following :

(1) xyz

(2) $xy + yz$

Answer the following questions :

1 Choose the correct answer from those given :

(1) $(x^2 + x) \div x = \dots\dots\dots$ where $x \neq \text{zero}$

- (a) zero (b) x (c) $2x + 1$ (d) $x + 1$

(2) $6x^3 \times 3x^4 = \dots\dots\dots$

- (a) $9x^7$ (b) $18x^{12}$ (c) $18x^7$ (d) $2x^7$

(3) If $(x - 3)(x + 3) = x^2 + k$, then $k = \dots\dots\dots$

- (a) -9 (b) 3 (c) 6 (d) 9

(4) The multiplicative inverse of the number 0.5 is $\dots\dots\dots$

- (a) 1 (b) 5 (c) -2 (d) 2

(5) Which of the following does represent the expression $3x + 2x$?

- (a)  (b) 
 (c)  (d) 

(6) The degree of the algebraic term $4x^2y^3$ is $\dots\dots\dots$

- (a) second. (b) third. (c) fourth. (d) fifth.

2 [a] Divide : $6x^2y + 9xy^2 - 12x^2y^3$ by $3xy$ where $xy \neq \text{zero}$

[b] Simplify to the simplest form : $(x - 5)(5 + x) - x^2$

3 [a] Subtract : $-a^2 - 5ab + 4b^2$ from $3a^2 - 2ab - 2b^2$

[b] Use the distribution property to find the value of : $-\frac{2}{5} \times 2 + \left(-\frac{2}{5}\right) \times 7 + \left(-\frac{2}{5}\right)$

4 [a] Find two rational numbers lying between $\frac{1}{3}$ and $\frac{1}{5}$

[b] The area of a rectangle is $(12a^4b^2 + 8a^3b^4 - 16a^2b^2) \text{ cm}^2$

and its width is $(2a^2b^2) \text{ cm}$.

Find the length of the rectangle.

Answer the following questions :

1 Choose the correct answer from those given :

- (1) If $\frac{2x+1}{x-1}$ is a rational number , then $x \neq$
- (a) -1 (b) 1 (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$
- (2) $5a$ exceeds $-5a$ by
- (a) zero (b) $-25a^2$ (c) $25a^2$ (d) $10a$
- (3) The degree of the algebraic expression $3x^2 + 5xy^2 + 6y^2$ is
- (a) first. (b) second. (c) third. (d) fourth.
- (4) $3x - 5y + 4x =$
- (a) $7x - 5y$ (b) $2xy$ (c) $x - 5y$ (d) $-60xy$
- (5) The additive inverse of the number $(-\frac{1}{5})^0$ is
- (a) 1 (b) -1 (c) 5 (d) $\frac{1}{5}$
- (6) The length of a rectangle is $2x$ cm. and its width is y cm. , then its perimeter = cm.
- (a) $2xy$ (b) $3xy$ (c) $2x + y$ (d) $4x + 2y$

2 Complete the following :

- (1) $2x^3 \times 3xy =$
- (2) If $x - y = 3$ and $x + y = 5$, then $x^2 - y^2 =$
- (3) $(x + 3y)^2 = x^2 + \dots + 9y^2$
- (4) The rational number that lies at the midpoint of the distance between $\frac{1}{4}$ and $\frac{1}{3}$ is

3 [a] Find the quotient : $x^4 + 3x^2 + 2$ by $x^2 + 1$

[b] Simplify to the simplest form : $(x + 5)^2 - (x + 3)(x - 3)$

, then find the numerical value of the result when $x = -3$

4 [a] If $x = \frac{1}{2}$, $y = \frac{2}{5}$ and $z = \frac{1}{5}$, then find the numerical value of the expression :

$xy - z$

[b] Find the product of the following in the simplest form : $(2x + 1)(4x - 5)$

Answer the following questions :

1 Choose the correct answer from those given :

- (1) The operation is not closed in the set of rational numbers.
 (a) addition (b) subtraction (c) multiplication (d) division
- (2) If $\frac{x}{y} = 1$, then $3x - 3y = \dots\dots\dots$
 (a) zero (b) 1 (c) 3 (d) 6
- (3) The middle term in the expression $(x - 5)^2 = \dots\dots\dots$
 (a) $5x$ (b) $10x$ (c) $-5x$ (d) $-10x$
- (4) The algebraic expression $3xy + 5$ is of the degree.
 (a) first (b) second (c) third (d) fifth
- The highest common factor of the expression $12x^3y^4 + 8x^2y^4$ is
 (a) $2x^2y^2$ (b) $4x^2y^4$ (c) $4x^3y$ (d) $12x^3y^4$
- The rational number $\frac{x}{-5}$ is negative if $x \dots\dots\dots$
 (a) $> \text{zero}$ (b) $< \text{zero}$ (c) $\leq \text{zero}$ (d) $= \text{zero}$

2 Factorize each of the following by identifying the highest common factor :

- (1) $10a^4x^2 + 15a^5x^4 - 30a^3x^3$
- (2) $3a(a - 2b) - 6b(a - 2b)$, then find the numerical value of the result
 when $a - 2b = \left| -\frac{1}{3} \right|$

3 [a] Find the result of the following using the factorization by identifying the H.C.F. :

$$(17)^2 - 8 \times 17 + 17$$

[b] Use the distribution property to find the result of : $-\frac{3}{7} \times 8 + 5 \times \left(-\frac{3}{7}\right) + \left(-\frac{3}{7}\right)$

4 [a] Simplify to the simplest form : $(2a - 3)^2 + (a - 2)(a + 2)$

[b] Find the quotient : $2x^2 + 13x + 15$ by $2x + 3$ where $(2x + 3) \neq 0$

Answer the following questions :

1 Choose the correct answer from those given :

- (1) $0.3 = \dots\dots\dots$
 (a) $\frac{3}{10}$ (b) $\frac{3}{100}$ (c) $\frac{3}{99}$ (d) $\frac{1}{3}$
- (2) $|-2| - |-13| = \dots\dots\dots$
 (a) -15 (b) 15 (c) -11 (d) 11
- (3) $50\% + \frac{3}{4} = \dots\dots\dots$
 (a) $\frac{1}{4}$ (b) 75% (c) 1.25 (d) 1
- (4) $4x$ exceeds $-3x$ by $\dots\dots\dots$
 (a) x (b) $-x$ (c) $7x$ (d) $-7x$
- (5) $|-3\frac{1}{2}| \dots\dots\dots |- \frac{7}{2}|$
 (a) $>$ (b) $<$ (c) $=$ (d) otherwise.
- (6) The algebraic expression $4x^3 - xy + 5$ is of the $\dots\dots\dots$ degree.
 (a) first (b) second (c) third (d) fourth

2 The following table shows the maximum and the minimum temperature degrees in some governorates in Egypt in one day :

Governorate	Cairo	Alex.	Port Said	Assiut	Aswan
Temperature degree					
Maximum	35	30	32	38	40
Minimum	25	20	25	25	27

Represent these data by graphic bars (columns) , then find :

- (1) The greatest maximum temperature degree and the smallest minimum temperature degree.
 (2) The difference between the maximum temperature degrees in Cairo and Alexandria.
 (3) The difference between the maximum and minimum temperature degrees in Aswan.

3 The monthly income of a family is L.E. 1000 , the family spends 25 % in transportation , 50 % in food , 20% in buying other things and it saves the remainder.
 Represent these data by circular pie charts and find the monthly saved money.

4 [a] Using the distribution property , find the value of : $94 \times 63 + 94 \times 37$

[b] Find the quotient of dividing : $\frac{8x^4 + 4x^3 - 2x^2}{2x^2}$, where $x \neq 0$

Answer the following questions :

1 Choose the correct answer from those given :

- (1) The number $\frac{x-2}{x+4}$ is a rational number if $x \neq$
 (a) 4 (b) 2 (c) -4 (d) -2
- (2) The algebraic term $-3a^2b^3$ is of degree.
 (a) the second (b) the third (c) the fourth (d) the fifth
- (3) If $(x+1)^2 = x^2 + kx + 1$, then $k =$
 (a) 1 (b) 2 (c) 3 (d) 4
- (4) $(y-1)(y^2+y+1) =$
 (a) $3y+6$ (b) y^3+6 (c) y^3+1 (d) y^3-1
- (5) If the mode of the values 7, 5, $y+3$, 5 and 7 is 7, then $y =$
 (a) 3 (b) 4 (c) 5 (d) 7
- (6) $|- \frac{1}{2}|$ $\frac{1}{4}$
 (a) $>$ (b) $<$ (c) $=$ (d) \leq

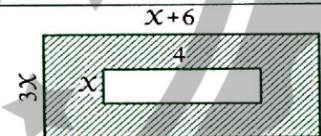
2 [a] Find the area of the shaded part in the opposite figure.

[b] Using the distribution property, find the value of :

$$\frac{5}{9} \times 10 + 18 \times \frac{5}{9} - \frac{5}{9}$$

[c] Find the quotient :

$$8x^3 - 125 \text{ by } 4x^2 + 10x + 25 \text{ where the dividend is not equal to :}$$



3 The following table shows the marks that Hend has got in an exam in mathematics in 5 months :

Month	Sept.	Oct.	Nov.	Dec.	Jan.
Mark	25	40	35	45	55

- (1) Represent these data by the broken line graph.
 (2) Find the difference between the greatest and the smallest marks obtained by Hend.

4 Represent the data shown in the following table by columns, then find the mode :

The mark	10	20	30	40	50
Number of pupils	9	8	7	10	6

Answer the following questions :

1 Choose the correct answer from those given :

- (1) The number is a positive rational number.
 (a) $|-2|$ (b) -5 (c) $-\frac{3}{7}$ (d) zero
- (2) If $a \times \frac{b}{2} = \frac{a}{2}$, then $b =$
 (a) $\frac{a}{2}$ (b) zero (c) 1 (d) -1
- (3) The number $\frac{x-3}{x-5} \in \mathbb{Q}$ if $x \neq$
 (a) 3 (b) -3 (c) 5 (d) -5
- (4) If the mode of the set of values : 7 , 5 , $x+1$, 7 , 5 is 5 , then $x =$
 (a) 7 (b) 6 (c) 5 (d) 4
- (5) If the area of a rectangle is $18x^3 \text{ cm}^2$ and its length = $6x^2 \text{ cm}$. , then its width = cm.
 (a) $3x$ (b) $3x^2$ (c) $3x^5$ (d) 3
- (6) If the median of the values : 27 , 45 , 19 , 24 and 28 is x , then x equals
 (a) 24 (b) 27 (c) 28 (d) 45

2 [a] If $x = \frac{1}{2}$ and $y = \frac{3}{4}$, find in the simplest form : $x^2 - 2xy$

[b] Find three rational numbers between : $\frac{2}{3}$ and $\frac{1}{5}$

3 [a] (1) Add : $2x + 3y - 7$ and $-2y + x + 5$

(2) Simplify to the simplest form : $(2x - 3)(2x + 3) + 2x(x + 5)$

[b] The following table shows the marks of two students , Sarah and Gamal , in mathematics , chemistry , physics , biology and history :

	Math.	Chems.	Phys.	Biol.	Hist.
Sarah	15	6	3	8	11
Gamal	8	7	5	9	13

Find the median mark for each of them.

Answer the following questions :

1 Choose the correct answer from those given :

- (1) The mode of the values : 3 , 6 , 10 , 13 , 19 , 19 and 21 is
 (a) 3 (b) 6 (c) 19 (d) 21
- (2) If the order of the median of number of values is the third , then the number of these values is
 (a) 3 (b) 4 (c) 5 (d) 6
- (3) If the mean of the numbers : 3 , 3 and x is 4 , then $x =$
 (a) 3 (b) 4 (c) 12 (d) 6
- (4) The remainder of subtracting $\frac{1}{3}$ from $\frac{4}{3}$ is
 (a) - 1 (b) 1 (c) 2 (d) - 2
- (5) $\frac{1}{3}$ $\frac{1}{6}$
 (a) > (b) < (c) = (d) \leq
- (6) The expression : $2a + 5ab$ is of the degree.
 (a) first (b) second (c) third (d) fourth

2 The following table shows the marks of a student in mathematics in 5 months :

Month	September	October	November	December	January
Marks	13	15	14	18	20

Represent these data by a broken line graph.

3 [a] Factorize by taking out the highest common factor of the expression :

$$16x^4 - 4x^2 + 8x$$

[b] Use the distribution property to find the value of : $\frac{4}{5} \times 13 - \frac{4}{5} \times 22 + \frac{4}{5} \times 9$

4 [a] Subtract : $-a^2 - 5ab + 4b^2$ from $3a^2 - 2ab - 2b^2$

[b] Find the rational number which lies at one fifth of the way between $\frac{1}{2}$ and $\frac{7}{8}$ from the side of the smaller number.

Answer the following questions :

1 Choose the correct answer from those given :

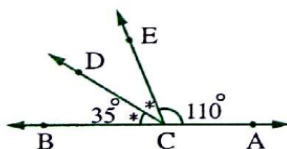
- (1) \overline{AB} \overrightarrow{AB}
 - (a) \in
 - (b) \notin
 - (c) \subset
 - (d) $\not\subset$
- (2) The angle whose measure = 62° is supplemented by an angle of measure
 - (a) 28°
 - (b) 118°
 - (c) 38°
 - (d) 128°
- (3) The angle whose measure = 37° complements an angle of measure
 - (a) 37°
 - (b) 53°
 - (c) 63°
 - (d) 143°
- (4) If $m(\angle A) + m(\angle B) = 90^\circ$, then $\angle A$ and $\angle B$ are
 - (a) equal in measure.
 - (b) complementary.
 - (c) supplementary.
 - (d) adjacent.
- (5) If the ratio between the measures of two supplementary angles is $1 : 2$, then the measure of the smaller angle equals
 - (a) 30°
 - (b) 120°
 - (c) 60°
 - (d) 150°

2 Complete the following :

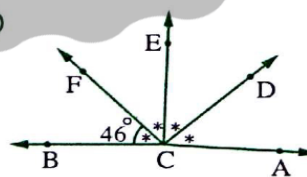
- (1) The angle is
- (2) The acute angle supplements angle.
- (3) If $m(\angle ABC) = 60^\circ$, then $m(\text{reflex } \angle ABC) = \dots\dots\dots^\circ$
- (4) The sum of measures of the two supplementary angles = $\dots\dots\dots^\circ$
- (5) The two adjacent angles whose two outer sides are perpendicular are

3 In each of the following figures : Are \overrightarrow{CA} and \overrightarrow{CB} on the same straight line ? Why ?

(1)

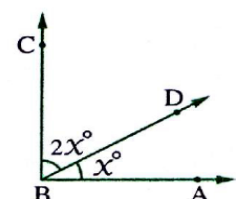


(2)



4 In the opposite figure :

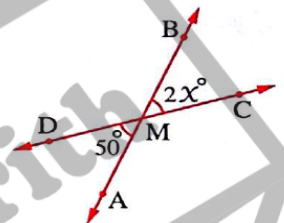
If $\overrightarrow{BC} \perp \overrightarrow{BA}$, then find the value of x



Answer the following questions :

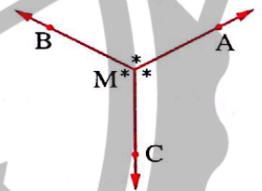
1 Complete the following :

- (1) Zero angle is complemented by angle.
- (2) If two straight lines intersect , then each two vertically opposite angles are
- (3) The two adjacent angles formed by a straight line and a ray with a starting point on this straight line are
- (4) In the opposite figure :
 $\overrightarrow{AB} \cap \overrightarrow{CD} = \{M\}$, then $x = \dots\dots\dots^\circ$
- (5) The sum of measures of two complementary angles = $^\circ$
- (6) The angle whose measure = 58° is supplemented by an angle whose measure = $^\circ$



2 Choose the correct answer from those given :

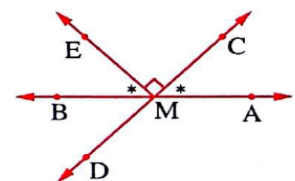
- (1) In the opposite figure :
 $m(\angle AMC) = \dots\dots\dots$
 (a) 60° (b) 120°
 (c) 150° (d) 360°
- (2) If $\angle A$ complements $\angle B$ and $m(\angle A) = 48^\circ$, then $m(\text{reflex } \angle B) = \dots\dots\dots$
 (a) 309° (b) 312° (c) 315° (d) 318°
- (3) If $\angle X$ and $\angle Y$ are supplementary and $m(\angle X) = \frac{1}{2} m(\angle Y)$, then $m(\angle Y) = \dots\dots\dots$
 (a) 30° (b) 60° (c) 120° (d) 180°
- (4) The sum of measures of the accumulative angles at a point =
 (a) 2 right angles. (b) 3 right angles. (c) 4 right angles. (d) 5 right angles.



3 In the opposite figure :

$\overrightarrow{AB} \cap \overrightarrow{CD} = \{M\}$, $m(\angle CME) = 90^\circ$,
 $m(\angle AMC) = m(\angle EMB)$

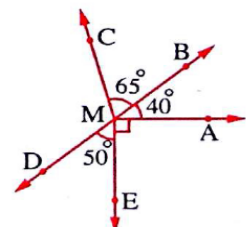
Find : (1) $m(\angle AMC)$ (2) $m(\angle BMD)$ (3) $m(\angle AMD)$



4 In the opposite figure :

$m(\angle AMB) = 40^\circ$, $m(\angle BMC) = 65^\circ$
 $, m(\angle DME) = 50^\circ$
 $, \angle AME$ is a right angle.

Find : $m(\angle CMD)$



Answer the following questions :

1 Choose the correct answer from those given :

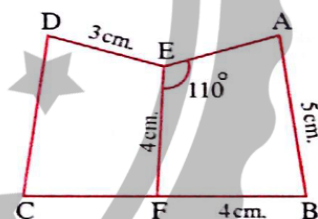
- (1) If $\overline{AB} \equiv \overline{CD}$, then $AB = \dots\dots\dots$
 - (a) \overline{CD}
 - (b) \overline{CD}
 - (c) CD
 - (d) AD
- (2) If a line segment is extended from one of its terminals without limit, it will be $\dots\dots\dots$
 - (a) a line segment.
 - (b) a ray.
 - (c) a straight line.
 - (d) an angle.
- (3) The acute angle supplements $\dots\dots\dots$ angle.
 - (a) an acute
 - (b) an obtuse
 - (c) a right
 - (d) a reflex
- (4) If $m(\angle A) = 90^\circ$, then $m(\text{reflex } \angle A) = \dots\dots\dots$
 - (a) 0°
 - (b) 90°
 - (c) 180°
 - (d) 270°
- (5) The measure of the supplementary angle of the angle whose measure $= 60^\circ$ equals $\dots\dots\dots$
 - (a) 30°
 - (b) 120°
 - (c) 180°
 - (d) 90°
- (6) If $\overline{AB} \equiv \overline{CD}$, then $AB - CD = \dots\dots\dots$
 - (a) $2AB$
 - (b) $2CD$
 - (c) AB
 - (d) zero

2 In the opposite figure :

If $F \in \overline{BC}$ and the figure $ABFE \equiv$ the figure $DCFE$

, complete the following :

- (1) The axis of symmetry of the figure is $\dots\dots\dots$
- (2) $AE = \dots\dots\dots$ cm.
- (3) $\angle D \equiv \angle \dots\dots\dots$
- (4) $m(\angle FED) = \dots\dots\dots^\circ$
- (5) $m(\angle EFB) = \dots\dots\dots^\circ$
- (6) The perimeter of the figure $ABCDE = \dots\dots\dots$ cm.



3 Complete the following :

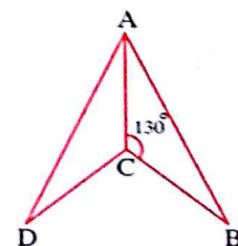
- (1) The two angles are congruent if they $\dots\dots\dots$
- (2) If the polygon $ABCD \equiv$ the polygon $LMNO$, then $m(\angle ABC) = m(\angle \dots\dots\dots)$
- (3) If $\angle A$ complements $\angle B$, $\angle A \equiv \angle B$, then $m(\angle A) = \dots\dots\dots^\circ$

(4) In the opposite figure :

If $\triangle ACB \equiv \triangle ACD$

, $m(\angle ACB) = 130^\circ$

, then $m(\angle BCD) = \dots\dots\dots^\circ$

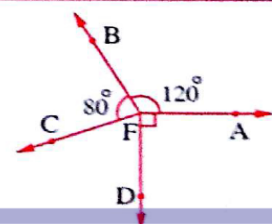


4 In the opposite figure :

$m(\angle AFB) = 120^\circ$, $m(\angle BFC) = 80^\circ$,

$m(\angle AFD) = 90^\circ$

Find : $m(\angle CFD)$



Answer the following questions :

1 Choose the correct answer from those given :

- (1) If $\triangle ABC \equiv \triangle XYZ$, $m(\angle A) = 40^\circ$, $m(\angle Y) = 60^\circ$, then $m(\angle C) = \dots\dots\dots$
 (a) 40° (b) 60° (c) 80° (d) 100°
- (2) The two triangles are congruent if
 (a) the lengths of two corresponding sides in them are equal.
 (b) the lengths of two corresponding sides and the measure of the included angle between them are equal.
 (c) the length of a side and measure of an angle are equal to their corresponding in the another triangle.
 (d) the measures of the corresponding angles are equal.
- (3) The two complementary adjacent angles, their terminal sides are
 (a) perpendicular. (b) on the same straight line.
 (c) coincident. (d) parallel.
- (4) In the following figures :
 The pair of congruent triangles is fig. (.....)



2 Complete the following :

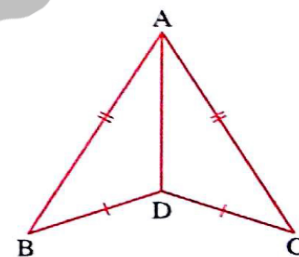
- (1) The right angle is complemented by an angle of measure $^\circ$
- (2) The reflex angle has measure greater than and less than
- (3) If the polygon $ABCD \equiv$ the polygon $AYXD$, then $m(\angle C) = m(\angle \dots\dots\dots)$
- (4) The sum of the measures of the accumulative angles at a point is $^\circ$

3 In the opposite figure :

$$AB = AC$$

$$, BD = CD$$

Is $\triangle ABD \equiv \triangle ACD$? Why ?



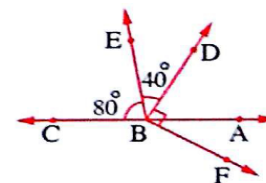
4 In the opposite figure :

$$B \in \overleftrightarrow{AC}, m(\angle EBC) = 80^\circ,$$

$$m(\angle DBE) = 40^\circ$$

$$\text{and } m(\angle DBF) = 90^\circ$$

Find : $m(\angle CBF)$



Answer the following questions :

1 Complete the following :

- (1) If a straight line cuts two parallel straight lines , then each two alternate angles are
- (2) If $\triangle ABC \equiv \triangle XYZ$ and $m(\angle A) + m(\angle B) = 100^\circ$, then $m(\angle Z) = \dots^\circ$
- (3) If two straight lines are parallel to a third straight line , then they are
- (4) The two straight lines are parallel if there is a transversal to them and the two interior angles in the same side of the transversal are

2 Choose the correct answer from those given :

- (1) If L_1, L_2 and L_3 are three straight lines in the plane , $L_1 \parallel L_2$ and $L_1 \perp L_3$, then
 (a) $L_2 \parallel L_3$ (b) $L_2 \perp L_3$ (c) $L_1 \perp L_2$ (d) $L_1 \parallel L_2 \parallel L_3$
- (2) If two straight lines are perpendicular to a third straight line , then they are
 (a) parallel. (b) perpendicular. (c) intersecting. (d) congruent.

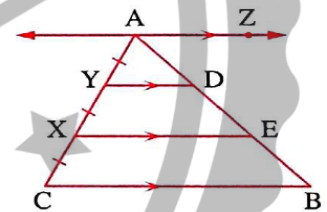
(3) In the opposite figure :

$\overrightarrow{AZ} \parallel \overrightarrow{YD} \parallel \overrightarrow{XE} \parallel \overrightarrow{CB}$,

$AY = YX = XC$, $AE = 12$ cm.

Then the length of $\overline{EB} = \dots$ cm.

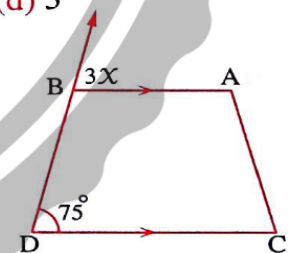
- (a) 12 (b) 6 (c) 18 (d) 3



(4) In the opposite figure :

$\overline{AB} \parallel \overline{DC}$, then $x = \dots$

- (a) 75° (b) 25°
 (c) 35° (d) 105°

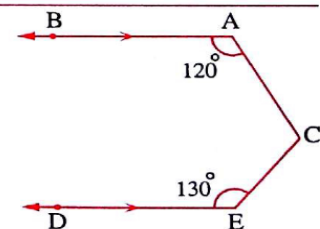


3 In the opposite figure :

$\overrightarrow{AB} \parallel \overrightarrow{ED}$, $m(\angle A) = 120^\circ$

and $m(\angle E) = 130^\circ$

Find : $m(\angle C)$

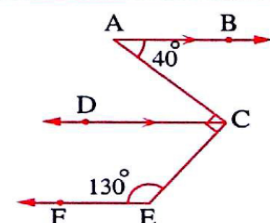


4 In the opposite figure :

$\overrightarrow{AB} \parallel \overrightarrow{CD}$, $m(\angle A) = 40^\circ$,

$m(\angle E) = 130^\circ$ and $m(\angle ACE) = 90^\circ$

Is \overrightarrow{CD} parallel to \overrightarrow{EF} ? Why ?



Answer the following questions :

1 Choose the correct answer from those given :

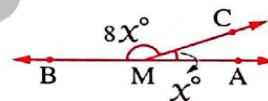
- (1) The sum of the measures of the accumulative angles at a point is
 - (a) 90°
 - (b) 180°
 - (c) 270°
 - (d) 360°
- (2) If $m(\angle X) = 80^\circ$ and $m(\angle Y) = 100^\circ$, then $\angle X$ and $\angle Y$ are two angles.
 - (a) supplementary
 - (b) acute
 - (c) obtuse
 - (d) complementary
- (3) If ABCD is a rectangle, then $\overline{AB} \equiv$
 - (a) \overline{AC}
 - (b) \overline{BD}
 - (c) \overline{BC}
 - (d) \overline{CD}
- (4) The two triangles are congruent if in one triangle are congruent to their corresponding in the other.
 - (a) each angle
 - (b) each side
 - (c) one of the sides
 - (d) one of the angles

2 Complete the following :

- (1) If the two adjacent angles are supplementary, then their outer sides are
- (2) The axis of symmetry of the line segment is
- (3) If a straight line cuts two parallel straight lines, then each two interior angles in the same side of the transversal are
- (4) In the opposite figure :

If $M \in \overline{AB}$,

then the value of $X =$ $^\circ$



- (3) Using the geometric instruments, draw an angle of measure 120° and bisect it into four equal angles in measure. (Don't remove the arcs)
- (4) Draw $\triangle ABC$ in which $AB = BC = 5$ cm. and $AC = 6$ cm. Using the compasses, bisect \overline{AC} in D, then draw \overline{BD} Does $\overline{BD} \perp \overline{AC}$?